

REMARKS

Claims 1-12 and 14-32 are pending in the application.

Claims 10-12, 14-20, and 25-28 have been allowed.

Claims 4-9, 22, 23, and 31 have been objected to, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-3, 21, 24, 29, 30, and 32 stand rejected.

Claims 1-3, 5, 7, 9, 21, 23, 24 and 29-32 have been amended.

Claim 4 has been withdrawn from consideration.

Reconsideration of claims 1-3, 5-9 and 21-24 and 29-32, as amended, is respectfully requested.

The Examiner has objected to claims 22-24 and 32 on the grounds of informality.

The Applicant has amended claim 21 to clarify the relationship between the electrical contacts and the conductors recited in claims 22-24. The Applicant has amended claim 32 to recite second and third sides to be consistent with claim 1. The Applicant believes that the claims, as amended, overcome the objections.

Claims 1, 3, 29-30, and 32 stand rejected under 35 U.S.C. 102(e) according to Minich, et al. (U.S. Patent No. 6,814,590).

Applicant discloses a heat removal device for electrical equipment including a power connector. The Applicant has amended claims 1-3, 29, 30 and 32 to more clearly recite other novel aspects and to facilitate bringing this case to allowance.

Claim 1 has been amended to include the further novel features of claim 4, which has been indicated as being allowable, namely a connector comprising:

“an air flow control device configured to direct air through holes in a circuit board and into one of the housing openings.”

Claims 2, 3, 29 and 30 have been amended to include further novel features recited in previously presented claims that have been found to be in allowable condition. For example, Claim 2 recites:

“A connector according to claim 1 wherein the air flows over a majority of a surface area of the conductors.”

Claim 3 recites:

“A connector according to claim 1 wherein the housing is attached over the circuit board.”

Claim 29 recites:

“A connector according to claim 1 including parallel airways formed between the conductors for channeling the air flow in a direction substantially perpendicular to the holes in the circuit board.”

Claim 30 depends on claim 29 and includes the further novel features of having “at least some of the holes are electrically connected to the circuit board.”

Claim 32 has been amended to overcome the Examiner’s objection, as discussed above, and to clarify further novel features not taught or disclosed by Minich.

Minich describes an electrical power contact for connecting a circuit board to another electrical component. Minich does not disclose an air flow device directing air through holes in a circuit board, nor does Minich teach an air flow over a majority of a surface area of conductors. Minich does not teach a housing attached over a circuit board. Furthermore, Minich does not teach channeling air flow in a direction substantially perpendicular to circuit board holes.

Claims 1, 3, 29-30, and 32 are allowable for the same or similar reasons as provided by the Examiner in allowing previously presented claims, in addition to the further novel features recited in the amended claims that are not taught or disclosed by Minich.

Claims 21 and 24 stand rejected under 35 U.S.C. 103(a) according to *Hamburgen* (U.S. Patent No. 4,839,774) in view of *Kramer, et al.* (U.S. Patent No. 6,574,108).

Claim 21 has been amended to recite:

“A method for removing heat, comprising:
directing an air flow from beneath a circuit board through a first set of electrically coupled contact holes located in the circuit board;
circulating the air past electrical contacts of conductors inserted in a second set of electrically coupled contact holes located in the circuit board; and
directing the air into a housing and through multiple passageways of the conductors.”

Hamburgen describes an array of nozzles for cooling electronic components (abstract). *Kramer* discloses a means of *conducting* heat “away from thermal vias to the heat sink layer” (summary of the invention, col. 2 lines 36-40). Neither *Hamburgen* nor *Kramer* disclose directing an air flow through a first set of electrically coupled contact holes in a circuit board.

Claim 24 has been amended to recite:

“a method according to claim 21 including circulating the air through parallel planar passageways formed between the conductors located in the housing.”

Neither Hamburgien nor Kramer discloses directing air into a housing containing the conductors, or of circulating the air through parallel planar passageways, according to amended claims 21 and 24. Claims 21 and 24 are allowable for these reasons, in addition to the further novel features recited in the amended claims that are not taught or disclosed by Hamburgien or Kramer.

For the foregoing reasons, reconsideration and allowance of claims 1-3, 5-12 and 14-32 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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